Energy conservation for inhomogeneous Euler equations

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Abstract

We consider the problem of energy conservation for the density-dependent Euler equations. In particular, we provide two types of sufficient conditions on the regularity of solutions that ensure the conservation of the total kinetic energy on the entire time interval including the initial time. The first type of data assumes integrability on the spatial gradient of the density and hence allows velocity to be rough in time. The second type imposes extra time regularity on the velocity and the result covers a wide range of rough density profiles. This is a joint work with Cheng Yu.